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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,168	02/12/2002	Charles M. Knop	47176-00727USPT	5026

30223 7590 03/13/2003

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EXAMINER

CLINGER, JAMES C

ART UNIT

PAPER NUMBER

2821

DATE MAILED: 03/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/074,168

Applicant(s)

Knop et al.

Examiner

Jim Clinger

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on Feb 12, 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14 and 28 is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-27, and 29-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Feb 12, 2002 is/are a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 4 6) ☐ Other:

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 9, 23 and 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9, 23 and 39, the limitation "optionally" in line 2 makes the claim indefinite because it is not clear if the limitation which follows is to be considered in determining patentability.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-13, 15-27 and 29-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Antenna Engineering Handbook by Richard Johnson in view of Wilson(4,658,258).

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The Antenna Engineering Handbook(AEH) discloses flare pyramidal horn elements with corrugated interior surfaces(pages 15-25 and 15-28).

The AEH does not disclose the use of the recited equation relating wavelength, aperture width and half angle.

Claims 1-3, 12, 16-17, 26, 29, 32-33, 41 and 43, Wilson discloses selecting horn antenna design parameters based on the value of the tangent of the half angle. While the horn in Wilson has chokes and not a corrugated surface, Wilson does disclose that the chokes can be substituted for the corrugated surface(col. 2, lines 42-68). Wilson(cols. 3-4) also discloses an analysis of his horn which is some what similar to an analysis for a corrugated horn. It would be an obvious modification of the analysis disclosed in Wilson for the analysis to be performed on a corrugated horn based on this disclosure since both devices are in the horn art. The equation(col. 3, line 17) obtained in Wilson relates the tangent of the half angle to the dimensions of the horn chokes and wall thickness. These horn dimensions variables are independent of the wavelength as are the variables which are set equal to the tangent expression recited in the claims of this application. It is a design choice to choose the values of these variables to be any value well known in the art. The recited values would be such values.

Claims 4-8, 18-22 and 34-38, the AEH discloses E-plane and H-plane walls having perpendicular corrugations.

Claims 9, 23 and 39, Wilson discloses a rectangular waveguide(fig. 2, no. 17).

Claims 10-11, 24-25, 30-31 and 40, see analysis in specification of Wilson(cols. 3-4).

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Claims 13, 27 and 42, the AEH discloses multi mode horns.

Claim 15, the use of the above disclosed horn antenna in a cellular communications system is obvious based on the common and well known use of other similar horn antennas in cellular communications systems.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the equation concerning the horn half angle to determine the dimensions of the horn disclosed in the AEH for improved horn performance.

***Allowable Subject Matter***

5. Claims 14 and 28 are allowed.
6. The following is a statement of reasons for the indication of allowable subject matter.

The limitation which is primarily responsible for distinguishing these claims over the prior art is the limitation concerning the absorber lined interior surfaces. The prior art does not disclose proper motivation for combining references which disclose absorber lined horn interior surfaces with the references which disclose the other limitations recited in these claims.

***Correspondence***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Jim Clinger whose phone number is (703) 305-0619.

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Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center whose telephone number is (703) 308-0956.

Papers related to Technology Center 2800 applications only may be submitted to Technology Center 2800 by facsimile transmission. Any transmission not to be considered an official response must be clearly marked "DRAFT". The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center Fax Center number is (703) 308-7722 or (703) 308-7724.

A handwritten signature in black ink, appearing to read "Jander", with a long horizontal stroke extending to the right.